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also by all other causes tending to the more rapid communication of heat. This is still more apparent when the coloured rings are formed in a thin plate of water interposed between the lenses, and where the effects are independent of radiation.

6. "Analysis of the Moira Brine Spring near Ashby-de-la-Zouch, Leicestershire, with Researches on the Extraction of Bromine." By Andrew Ure, M.D., F.R.S.

The water derived from the spring in question is raised by means of a pump from the coal mines in the neighbourhood of Ashby-de-la-Zouch, is much used as medicinal baths, and is also administered internally, principally as a remedy for bronchocele and scrofulous tumors. The result of the analysis made by the author, is that it contains per gallon,

Bromide of sodium and magnesium .....	grs. 8
Chloride of calcium .....	851·2
— magnesium .....	16
— sodium .....	3700·5
Protoxide of iron, a trace	

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Solid contents ..... 4575·7

After removing from the water the deliquescent chlorides of lime and magnesia by the addition of carbonate of soda, he transmits through the mother liquor, consisting of chloride and bromide of sodium, a current of chlorine gas, till it communicates the maximum golden tint, and then adds sulphuric æther, which, by agitation, carries with it to the surface the bromine and chlorine, constituting a reddish yellow stratum. The proportion in which these two elements exist in the evaporated solution may be ascertained with the greatest nicety by the addition of a solution of nitrate of silver; the method of calculation for this purpose being detailed by the author.

7. "On the Nature and Origin of the Aurora Borealis." By the Rev. George Fisher, M.A., F.R.S.

The author deduces from his own observations made during a residence of two winters in high northern latitudes, taken in conjunction with the concurring testimony of various navigators and travellers, the general fact that the Aurora Borealis is developed chiefly at the edge of the Frozen Sea, or wherever there is a vast accumulation of ice; and he conceives that it is produced in situations where the vapours of a humid atmosphere are undergoing rapid congelation. Under these circumstances, when viewed from a distance, it is seen fringing the upper border of the dark clouds, termed the "sea blink," which collect over these places; and it generally forms an arch a few degrees above the horizon, shooting out vertical columns of pale yellow light. He concludes that the Aurora Borealis is an electrical phenomenon, arising from the positive electricity of the atmosphere, developed by the rapid condensation of the vapour in the act of freezing, and the induced negative electricity of the surrounding portions of the atmosphere; and that it is the immediate consequence

of the restoration of the electrical equilibrium by the intervention of the frozen particles, which being imperfect conductors, become luminous while transmitting this electricity. In tropical and temperate climates this phenomenon does not occur, because the electric equilibrium is restored by means of aqueous vapours, a process which often gives rise to thunder and lightning, but never to the Aurora Borealis; the latter being peculiar to clear, cold and dry weather.

8. "Théorie Balistique." Par M. Le Comte de Prédaval. Communicated by Dr. Roget, Sec. R.S.

The author inquires into the influence which he conceives the following circumstances may have on the path of a projectile on the surface of the earth; namely, first, the direction of the line of projection relatively to the meridian or cardinal points; secondly, the latitude of the place; and thirdly, the barometric conditions of the atmosphere.

9. "On the Atmospheric Tides and Meteorology of Dukhun, in the East Indies." By Lieut.-Colonel W. H. Sykes, F.R.S.

The author premises detailed descriptions of the various instruments used in the meteorological observations recorded in this paper, and of the methods employed in obtaining his results; of which the great features are the barometrical indications of diurnal and nocturnal atmospheric tides, embracing two maxima and two minima in the twenty-four hours. The following are the chief topics noticed in the paper, and the principal facts established by these inquiries: namely, 1. The removal of the doubts entertained by Humboldt, founded on the authority of Horsburgh, of the suspension of the atmospheric tides during the monsoon in Western India; the existence of the four atmospheric tides already mentioned, and their occurrence within the same limiting hours as in America and Europe; the greatest mean diurnal oscillations in Dukhun taking place in the coldest months, and the smallest in the damp months; whilst at Madras, the smallest oscillations are in the hottest months, and in Europe it is supposed that the smallest oscillations are in the coldest months. 2. The regular diurnal and nocturnal occurrence of the tides, without a single case of interversion, whatever may be the thermometric or hydrometric indications, or the state of the weather; storms and hurricanes only modifying, but not interrupting them. 3. The anomalous fact of the mean diurnal oscillations being greater at Poona, at an elevation of 1823 feet, than at the level of the sea, in a lower latitude, at Madras. 4. The fact of the diurnal tides, at a higher elevation than Poona, being less, whilst the nocturnal tides are greater than at Poona; and the seasons apparently not affecting the limiting hours of the tides. 5. The maximum mean pressure of the atmosphere being greatest in December and January; then gradually diminishing until July and August; and subsequently increasing to the coldest months. 6. The very trifling diurnal and annual oscillations compared with those of extra-tropical climates. 7. The annual range of the thermometer being less in Dukhun